

**Amendments to the Specification:**

Please replace the paragraph beginning at page 6, line 16, with the following redlined paragraph:

The sensor 1 comprises an “analogue-analog” part containing  $n \times m$  cells, each with a specific optical sensor related to a respective pixel.

Please replace the paragraph beginning at page 9, line 13, with the following redlined paragraph:

Particularly, in the architecture diagram shown in Figure 5, numeral 21 indicates the array (typically a matrix) of analogue-analog cells comprising the optical sensors  $Q_{ij}$  locally interconnected to the adjacent cells by a set of programmable weight and difference parameters, *i.e.*, the factors A, B and  $I_{bias}$  seen above, forming the configuration parameters of the neural network.

Please replace the paragraph beginning at page 9, line 18, with the following redlined paragraph:

Numeral 22 indicates an internal analogue-analog memory for temporary storing the cell intermediate values during processing, *i.e.*, one or more of the images acquired by the optical sensor.

Please replace the paragraph beginning at page 9, line 21, with the following redlined paragraph:

Numeral 23 indicates a set of digital registers for storing the programming and configuration parameters destined to be transmitted to the array 21 after conversion in analogue-analog format via a digital-analogue-analog converter 24.

Please replace the paragraph beginning at page 9, line 24, with the following redlined paragraph:

Numeral 25 on the other hand indicates a digital program memory (configured, for example, as flash memory, EPROM or SRAM with external memory interface), while numeral 26 refers to a control logic, which governs all the elements in the architecture with the additional possibility of working as a decoder when reading the processing results generated by the array 21 of analogueanalog cells.

Please replace the paragraph beginning at page 10, line 1, with the following redlined paragraph:

Finally, numeral 27 indicates the total of input-output circuits (which can be either analogueanalog or digital) for external interfacing and chip programming.

Please replace the paragraph beginning at page 10, line 13, with the following redlined paragraph:

Once the image has been fully acquired (with an acquisition time that depends on the chip resolution and the respective technology), it is stored internally as a set of analogueanalog voltage values (pixels per pixel), adapted then to be directly processed on-chip according to the proposed architecture.

Please replace the paragraph beginning at page 13, line 7, with the following redlined paragraph:

The various processing functions described above can be integrated to originate algorithms that can be run under the control of the program memory 25 (see chart in Figure 5), transferring the corresponding sets of parameters A, B, and  $I_{bias}$  retrieved from the registers 23 and converted in analogueanalog format by the converter 24 to the array 21.

Please replace the paragraph beginning at page 13, line 13, with the following redlined paragraph:

It is emphasised once again that the solution according to this invention allows the integration of the image acquisition function and the image processing function on a single component. The latter function is implemented according to methods (using a cellular neural network, or CNN) ensuring processing times which, with equality of all other parameters, are considerably lower than the results which can be obtained by means of solutions in which the signals corresponding to the acquired images in the form of analogueanalog signals must be converted in digital format to be processed (which furthermore is essentially serial).

Please replace the paragraph beginning at page 13, line 26, with the following redlined paragraph:

Particularly, in the diagram in Figure 7, starting from step 100, numeral 102 indicates the step in which the “i-th” frame is acquired (according to known criteria). The frame is stored in the analogueanalog internal memory 22 in the step referred to with numeral 104.